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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/684,666	10/14/2003	Dong Yuel Jo	10125/4123	3394

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EXAMINER
ARANCIBIA, MAUREEN GRAMAGLIA

ART UNIT	PAPER NUMBER
1763	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary	**Application No.** 10/684,666	**Applicant(s)** JO, DONG YUEL
	Examiner Maureen G. Arancibia	**Art Unit** 1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 December 2006*.
2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16 and 26-37* is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-16 and 26-37* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a)☐ All b)☐ Some * c)☐ None of:
1.☐ Certified copies of the priority documents have been received.
2.☐ Certified copies of the priority documents have been received in Application No. _____.
3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7 December 2006 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-8, 30, and 32-37 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 179,581 to Lyman.

In regards to Claims 1, 8, 30, and 37, Lyman teaches an exhaust apparatus (Figure 2), comprising: an exhaust hole A'; an exhaust plate B to collect liquid (Figure 2; first full paragraph in the second column); a support part B' that fixes the exhaust plate B to the exhaust hole A' via a connecting cylindrical member (Figure 2), as broadly recited in the claims, and disposed such that substantially all of an entire outer surface of the support part B' is exposed to the gaseous exhaust (Figure 2; note that this is true regardless of which side of the support part B' is designated the "outer surface"); and an exhaust line D connected with the exhaust plate, a conduit through which collected liquid is removed (first two paragraphs in the second column); wherein a width of an opening formed by a first end of an upper surface of the exhaust plate B most proximate to the exhaust hole A' (i.e. the top end of exhaust plate B) is larger than a width of the support part B' most distal from the exhaust hole A' (i.e. the peripheral rim of support part B'), as broadly recited in the claims. Note that the connecting cylindrical member is mounted on the outer peripheral surface of support part B' and the inner peripheral surface of exhaust plate B, so the width of the opening formed by the first end of the upper surface of the exhaust plate B' most proximate to the exhaust hole A' is larger than the width of the support part B' most distal from the exhaust hole A' by a measure of the thickness of the connecting cylindrical member, thus meeting the broadly recited limitations of the claims. The upper surface of the exhaust plate B is tapered. (Figure 2)

Note that the recitations of intended use of this apparatus to be installed in an etching system including an etchant supply apparatus (tank), to provide for the exhaust of etchant generated from the etchant supply apparatus (tank), and for the exhaust line to be disposed to provide for the reuse of liquefied etchant in an etching system have been fully considered, but do not carry patentable weight. It has been held that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). In the instant case, Lyman teaches all of the structural limitations of the claim, and would structurally capable of being installed so as to perform the recited intended uses. (See also MPEP 2114.)

In regards to Claim 2, exhaust hole A' has a hollow cylindrical shape. (Figure 2)

In regards to Claims 3, 4, and 34-36, the upper surface of the exhaust plate B tapers continuously along the entire length of the upper surface between a first end and a second end with a constant slope towards a center of the exhaust plate, with the width of an opening formed by a first end of the upper surface most proximate to the exhaust hole A' being larger than a width of an opening formed by a second end of the upper surface most distal from the exhaust hole. (Figure 2)

In regards to Claim 5, the space between the exhaust hole A' and the exhaust plate B provides a route through which the gaseous exhaust is induced into the exhaust hole. (Figure 2; first full paragraph in the second column; *the remainder passes between the bases of the cones into the deflector C', from which it escapes through the pipe A'*)

In regards to Claims 6 and 32, the support part B' is formed in a substantially frustoconical shape in which a width of the support part most proximate to the exhaust hole A' is smaller than a width of the support part most distal from the exhaust hole. (Figure 2)

In regards to Claim 7, the exhaust line D is disposed such that liquefied process fluid in the exhaust line is removed from the exhaust apparatus by flowing downward and out line D. (Figure 2; second full paragraph in the second column)

In regards to Claim 33, the support part B' tapers continuously along the entire length of the support part. (Figure 2)

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claims 9-16, 26-29, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lyman in view of the English Machine Translation of Japanese Patent Application Publication 11-293479 to Kobayashi et al.**

The teachings of Lyman were discussed above.

In regards to Claim 9, Lyman does not teach an etchant supply apparatus and an etch chamber.

Kobayashi et al. teaches that an exhaust apparatus 1C can be employed in an etching system, comprising an etchant supply apparatus 10 and an etch chamber 2. (Machine Translation, Paragraphs 14 and 15)

It would have been obvious to one of ordinary skill in the art to use the exhaust apparatus taught by Lyman in the etching system of Kobayashi et al. The motivation for doing so, as would have come from within the knowledge of one of ordinary skill in the art, would have been to make use of the exhaust apparatus of Lyman to perform the separation of the gaseous and liquid etchant components in a more compact format than the exhaust apparatus 1C taught by Kobayashi et al. One of ordinary skill in the art would have been further motivated to make use of the exhaust apparatus of Lyman in the etching system of Kobayashi et al. by Lyman's teaching (third full paragraph in the first column; second full paragraph in the second column) that the exhaust apparatus removes solid impurities from the exhaust stream.

In regards to Claim 10, see the discussion of Claim 2.

In regards to Claim 11, see the discussion of Claim 3.

In regards to Claim 12, see the discussion of Claim 4.

In regards to Claim 13, see the discussion of Claim 5.

In regards to Claim 14, see the discussion of Claim 6.

In regards to Claim 15, see the discussion of Claim 7.

In regards to Claim 16, the combination of Lyman and Kobayashi et al. applied to Claim 9 does not teach that the liquid removed by the exhaust line can be reused, specifically in an etching system.

Kobayashi et al. teaches that liquid etchant from an etching tank 2 can be recovered and reused. (Machine Translation, Paragraph 16)

It would have been obvious to one of ordinary skill in the art to use the exhaust apparatus taught by the combination of Lyman and Kobayashi et al. to recover and reuse liquid etchant in the etching system, as taught by Kobayashi et al. The motivation for doing so, as would have come from within the knowledge of one of ordinary skill in the art, would be to lessen the cost and environmental impact of the etching procedure by recycling the etchant. One of ordinary skill in the art would have been further motivated to recover and reuse liquid etchant in the etching system by Kobayashi et al.'s teaching (Paragraph 5) that doing so allows for efficient and continuous etch processing (*regeneration equipment...which can be efficiently operated also in continuation etching*).

In regards to Claims 26 and 31, Lyman does not expressly teach that the support part, exhaust plate, and exhaust hole are formed from material that resists corrosion by an etchant.

Kobayashi et al. teaches that components of the etching apparatus should be made of corrosion-resistant material. (Paragraph 20)

It would have been obvious to one of ordinary skill in the art to modify the apparatus taught by Lyman to form the support part, exhaust plate, and exhaust hole from material that resists corrosion by an etchant. The motivation for doing so, as taught by Kobayashi et al. (Paragraph 20), would have been to make the apparatus durable (to give it endurance).

In regards to Claim 27, the combination of Lyman and Kobayashi et al. as applied to Claim 9 does not expressly teach that the support part, exhaust plate, and exhaust hole are formed from material that resists corrosion by an etchant.

Kobayashi et al. additionally teaches that components of the etching apparatus should be made of corrosion-resistant material. (Paragraph 20)

It would have been obvious to one of ordinary skill in the art to modify the combination of Lyman and Kobayashi et al. to form the support part, exhaust plate, and exhaust hole from material that resists corrosion by an etchant. The motivation for doing so, as taught by Kobayashi et al. (Paragraph 20), would have been to make the apparatus durable (to give it endurance).

In regards to Claim 28, see the discussion of Claim 1.

In regards to Claim 29, Lyman teaches that the support part B' contacts an upper surface of the exhaust plate B, as broadly recited in the claim, via a connecting cylindrical member. (Figure 2)

Response to Arguments

6. Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection. Note that the previously cited prior art is applied using a new grounds of rejection that meets the newly added limitations to the claims, as set forth above.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maureen G. Arancibia whose telephone number is (571) 272-1219. The examiner can normally be reached on core hours of 10-5, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Maureen

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